

Claims

What is claimed is:

- 1 1. A method of accessing a first file on a disk system on one of a
2 plurality of computer systems from a program executing on another of
3 the plurality of computer systems, wherein:
4 the plurality of computer systems comprises:
5 a first computer system containing the program communicating
6 through an API with a first interface system, and
7 a second computer system containing the disk system and a
8 second interface system for communicating with the first
9 interface system and for reading from and writing to the
10 disk system;
11 the first computer system and the second computer system are
12 heterogeneous computer systems;
13 said method comprising:
14 A) opening a first session from the program via the API through the
15 first interface system to the second interface system in order to
16 access the first file on the disk system;
17 B) blocking the first plurality of records into a first plurality of blocks;
18 C) transmitting the first plurality of blocks over the first session from
19 a first one of the plurality of computer systems to a second one
20 of the plurality of computer systems;
21 D) unblocking the first plurality of blocks into a second plurality of
22 records on the second one of the plurality of computer systems;
23 and
24 E) closing the first session after completing the transmitting in step
25 (C).

- 1 2. The method in claim 1 wherein:
2 the first computer system is the first of the plurality of computer
3 systems;
4 the second computer system is the second of the plurality of computer
5 systems; and
6 the method further comprises:
7 F) receiving the first plurality of records via the API from
8 the program; and
9 G) writing the second plurality of records to the first file.
- 1 3. The method in claim 1 wherein:
2 the first computer system is the second of the plurality of computer
3 systems; and
4 the second computer system is the first of the plurality of computer
5 systems;
6 the method further comprises:
7 F) reading the first plurality of records from the first file;
8 and
9 G) receiving the second plurality of records in the program
10 via the API.
- 1 4. The method in claim 1 wherein:
2 the transmitting in step (C) utilizes a credit based flow control
3 mechanism to flow control the first plurality of blocks; and
4 the credit based flow control mechanism utilizes a block based credit
5 counting each of the first plurality of blocks a one credit.

- 1 5. The method in claim 1 which further comprises:
2 F) opening a second session from the program via the API through
3 the first interface system to the second interface system in order
4 to access a second file on the disk system while the first session
5 is still open;
6 G) blocking a third plurality of records into a second plurality of
7 blocks;
8 H) transmitting the second plurality of blocks over the second session
9 from a third one of the plurality of computer systems to a fourth
10 one of the plurality of computer systems;
11 I) unblocking the second plurality of blocks into a fourth plurality of
12 records on the fourth one of the plurality of computer systems;
13 and
14 J) closing the second session after completing the transmitting
15 closing the second session after completing the transmitting
16 over the second session in step (H).
- 1 6. The method in claim 5 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the third one of the plurality of computer systems;
4 the second computer system is the second one of the plurality of
5 computer systems and the fourth one of the plurality of
6 computer systems; and
7 the method further comprises:
8 K) receiving the first plurality of records via the API from
9 the program for transmission over the first session;
10 L) receiving the third plurality of records via the API from
11 the program for transmission over the second session;
12 M) writing the second plurality of records to the first file;
13 and
14 N) writing the fourth plurality of records to the second file.

1 7. The method in claim 5 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the fourth one of the plurality of computer
4 systems;
5 the second computer system is the second one of the plurality of
6 computer systems and the third one of the plurality of computer
7 systems; and
8 the method further comprises:
9 K) receiving the first plurality of records via the API from
10 the program for transmission over the first session;
11 L) writing the second plurality of records to the first file;
12 M) reading the third plurality of records from the second file;
13 and
14 N) receiving the fourth plurality of records in the program
15 via the API.

1 8. The method in claim 1 wherein:
2 the first computer system is a mainframe computer system; and
3 the second computer system is a UNIX based computer system.
1 9. The method in claim 1 wherein:
2 character data is stored in the first computer system in a first one of a
3 plurality of character formats;
4 character data is stored in the second computer system in a second one
5 of a plurality of character formats; and
6 the method further comprises:
7 F) translating at least a portion of each of the records in the first
8 plurality of blocks from one of the plurality of character
9 formats to another one of the plurality of character formats.

- 1 10. The method in claim 1 wherein:
2 integer data is stored in the first computer system in a first one of a
3 plurality of integer formats;
4 integer data is stored in the second computer system in a second one
5 of a plurality of integer formats; and
6 the method further comprises:
7 F) translating at least a portion of each of the records in the first
8 plurality of blocks from one of the plurality of integer formats
9 to another one of the plurality of integer formats.

- 1 11. A data processing system having software stored in a set of Computer
2 Software Storage Media for accessing a first file on a disk system on
3 one of a plurality of computer systems from a program executing on
4 another of the plurality of computer systems, wherein:
5 the plurality of computer systems comprises:
6 a first computer system containing the program communicating
7 through an API with a first interface system, and
8 a second computer system containing the disk system and a
9 second interface system for communicating with the first
10 interface system and for reading from and writing to the
11 disk system;
12 the first computer system and the second computer system are
13 heterogeneous computer systems;
14 said software comprising:
15 A) a set of computer instructions for opening a first session from the
16 program through the first interface system to the second
17 interface system in order to access the first file on the disk
18 system;
19 B) a set of computer instructions for blocking the first plurality of
20 records into a first plurality of blocks;
21 C) a set of computer instructions for transmitting the first plurality of
22 blocks over the first session from a first one of the plurality of
23 computer systems to a second one of the plurality of computer
24 systems;
25 D) a set of computer instructions for unblocking the first plurality of
26 blocks into a second plurality of records on the second one of
27 the plurality of computer systems; and
28 E) a set of computer instructions for closing the first session after
29 completing the transmitting in set (C).

- 1 12. The software in claim 11 wherein:
2 the first computer system is the first of the plurality of computer
3 systems;
4 the second computer system is the second of the plurality of computer
5 systems; and
6 the software further comprises:
7 F) a set of computer instructions for receiving the first
8 plurality of records via the API from the program; and
9 G) a set of computer instructions for writing the second
10 plurality of records to the first file.
- 1 13. The software in claim 11 wherein:
2 the first computer system is the second of the plurality of computer
3 systems; and
4 the second computer system is the first of the plurality of computer
5 systems;
6 the software further comprises:
7 F) a set of computer instructions for reading the first
8 plurality of records from the first file; and
9 G) a set of computer instructions for receiving the second
10 plurality of records in the program via the API.
- 1 14. The software in claim 11 wherein:
2 the transmitting in set (C) utilizes a credit based flow control
3 mechanism to flow control the first plurality of blocks; and
4 the credit based flow control mechanism utilizes a block based credit
5 counting each of the first plurality of blocks a one credit.

- 1 15. The software in claim 11 which further comprises:
- 2 F) a set of computer instructions for opening a second session from
3 the program via the API through the first interface system to the
4 second interface system in order to access a second file on the
5 disk system while the first session is still open;
- 6 G) a set of computer instructions for blocking a third plurality of
7 records into a second plurality of blocks;
- 8 H) a set of computer instructions for transmitting the second plurality
9 of blocks over the second session from a third one of the
10 plurality of computer systems to a fourth one of the plurality of
11 computer systems;
- 12 I) a set of computer instructions for unblocking the second plurality
13 of blocks into a fourth plurality of records on the fourth one of
14 the plurality of computer systems; and
- 15 J) a set of computer instructions for closing the second session after
16 completing the transmitting closing the second session after
17 completing the transmitting over the second session in set (H).

- 1 16. The software in claim 15 wherein:
- 2 the first computer system is the first one of the plurality of computer
3 systems and the third one of the plurality of computer systems;
4 the second computer system is the second one of the plurality of
5 computer systems and the fourth one of the plurality of
6 computer systems; and
- 7 the software further comprises:
- 8 K) a set of computer instructions for receiving the first
9 plurality of records via the API from the program for
10 transmission over the first session;
- 11 L) a set of computer instructions for receiving the third
12 plurality of records via the API from the program for
13 transmission over the second session;
- 14 M) a set of computer instructions for writing the second
15 plurality of records to the first file; and
- 16 N) a set of computer instructions for writing the fourth
17 plurality of records to the second file.

- 1 17. The software in claim 15 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the fourth one of the plurality of computer
4 systems;
5 the second computer system is the second one of the plurality of
6 computer systems and the third one of the plurality of computer
7 systems; and
8 the software further comprises:
9 K) a set of computer instructions for receiving the first
10 plurality of records via the API from the program for
11 transmission over the first session;
12 L) a set of computer instructions for writing the second
13 plurality of records to the first file;
14 M) a set of computer instructions for reading the third
15 plurality of records from the second file; and
16 N) a set of computer instructions for receiving the fourth
17 plurality of records in the program via the API.
- 1 18. The software in claim 11 wherein:
2 the first computer system is a mainframe computer system; and
3 the second computer system is a UNIX based computer system.
- 1 19. The software in claim 1 wherein:
2 character data is stored in the first computer system in a first one of a
3 plurality of character formats;
4 character data is stored in the second computer system in a second one
5 of a plurality of character formats; and
6 the software further comprises:
7 F) a set of computer instructions for translating at least a portion of
8 each of the records in the first plurality of blocks from one of
9 the plurality of character formats to another one of the plurality
10 of character formats.

- 1 20. The software in claim 1 wherein:
- 2 integer data is stored in the first computer system in a first one of a
- 3 plurality of integer formats;
- 4 integer data is stored in the second computer system in a second one
- 5 of a plurality of integer formats; and
- 6 the software further comprises:
- 7 F) a set of computer instructions for translating at least a portion of
- 8 each of the records in the first plurality of blocks from one of
- 9 the plurality of integer formats to another one of the plurality of
- 10 integer formats.

- 1 21. A computer readable Non-Volatile Storage Medium encoded with
2 software for accessing a first file on a disk system on one of a
3 plurality of computer systems from a program executing on another of
4 the plurality of computer systems, wherein:
5 the plurality of computer systems comprises:
6 a first computer system containing the program communicating
7 through an API with a first interface system, and
8 a second computer system containing the disk system and a
9 second interface system for communicating with the first
10 interface system and for reading from and writing to the
11 disk system;
12 the first computer system and the second computer system are
13 heterogeneous computer systems;
14 said software comprising:
15 A) a set of computer instructions for opening a first session from the
16 program through the first interface system to the second
17 interface system in order to access the first file on the disk
18 system;
19 B) a set of computer instructions blocking the first plurality of records
20 into a first plurality of blocks;
21 C) a set of computer instructions for transmitting the first plurality of
22 blocks over the first session from a first one of the plurality of
23 computer systems to a second one of the plurality of computer
24 systems;
25 D) a set of computer instructions for unblocking the first plurality of
26 blocks into a second plurality of records on the second one of
27 the plurality of computer systems; and
28 E) a set of computer instructions for closing the first session after
29 completing the transmitting in set (C).

- 1 22. A data processing system having software stored in a set of Computer
2 Software Storage Media for accessing a first file on a disk system on
3 one of a plurality of computer systems from a program executing on
4 another of the plurality of computer systems, wherein:
5 the plurality of computer systems comprises:
6 a first computer system containing the program communicating
7 through an API with a first interface system, and
8 a second computer system containing the disk system and a
9 second interface system for communicating with the first
10 interface system and for reading from and writing to the
11 disk system;
12 the first computer system and the second computer system are
13 heterogeneous computer systems;
14 said software comprising:
15 A) means for opening a first session from the program through the
16 first interface system to the second interface system in order to
17 access the first file on the disk system;
18 B) means for blocking the first plurality of records into a first plurality
19 of blocks;
20 C) means for transmitting the first plurality of blocks over the first
21 session from a first one of the plurality of computer systems to
22 a second one of the plurality of computer systems;
23 D) means for unblocking the first plurality of blocks into a second
24 plurality of records on the second one of the plurality of
25 computer systems; and
26 E) means for closing the first session after completing the transmitting
27 in means (D).